

Barrier

Input file: **standard input**
Output file: **standard output**
Time limit: 1 second
Memory limit: 256 megabytes

There is a rectangular room in the 2-D plane. There are some barriers in the room, each of which could be represented by a segment with no thickness.

Please find out the length of the walls of the room that can be seen from the center of the room. It is guaranteed that the center of the room is $(0, 0)$.

Input

The first line contains an integer n ($1 \leq n \leq 1000$), indicating the number of barriers.

n lines follow, each containing four integers x_1, y_1, x_2, y_2 ($|x_1|, |y_1|, |x_2|, |y_2| \leq 10000$), indicating the beginning and the end point of a barrier segment.

Another line follows, containing four integers l, r, u, d ($1 \leq l, r, u, d \leq 10000$), indicating the distance between the left, right, upper, and lower border of the rectangular room and $(0, 0)$.

Output

Output a real number, indicating the length of walls of the room that can be seen from $(0, 0)$.

Example

standard input	standard output
1 1 0 0 1 2 2 2 2	12.00000000

Note

Barriers will not be too close to $(0, 0)$ or the walls.

Your answer is considered correct when the relative or absolute error from the standard answer does not exceed 10^{-4} .